1.) Inspect the summary statistics for the NPO's customer base ...

a. Interpret the overall retention rate for the NPOs customer base. How likely is the "average donor" to churn? The overall retention rate is above 90% for each segment indicating the average doner is unlikely to churn. The average donor churn rate, using weighted average, is: (401*0.1+422*0.055+393*0.029) = 6.14%

b. Provide a "donor profile" for each RFM segment, based on the average transaction behavior for each segment. For segment one the donor's transaction has a low recency, low transaction count and low retention rate. As you go to segment 2, 3 retention rate increases. Segment 2 donates more often and 3 donates the most.

c. Choose a label for every segment that captures the donor profile. (use adjectives to scale profiles) 1. sleepers 2. low energy 3. active

d. Which segment is most valuable for the NPO? Compute the CLV for each segment. Note that the donation amount is on the transaction-level (i.e., not annual), while the number of transactions is the average number of donations per year. Assume a discount rate of 8% and the following annual marketing costs:

i. Segment 1:20 EUR, CLV1= (30.50401- 20)/ (1-0.9001086+0.08) = 58

ii. Segment 2: 20 EUR, CLV2= (2.77*47.67 - 20)/ (1-0.9448541+0.08) = 830

iii. Segment 3: 24 EUR. CLV3= (4.39*51.87- 24)/ (1-0.9706927+0.08) = 1866

2.) Based on the transition probabilities between RFM segments ...

a. Why does the transition probability "Lost" -> "Lost" equal one? Because we assume if the customer is lost its lost forever, even if reality this may not be the case. In the diagram the arrow to lost only goes to lost and does not cycle anywhere else.

b. At the end of the observation period, the RFM segment sizes are as follows.

i. Segment 1: 84,

ii. Segment 2: 232,

iii. Segment 3: 329.

Based on the transition probabilities, how many donors can the NPO expect to be in Segment 3 in the following year? Looking at how each customer migrate in the table. Rows add almost to one. To calculate size, look at columns: so, from 1: 0.318*82=26.712, 2: 0.465*232=107.88, 3: 0.761*329=250.369. By summing each segment, seg3 we have: 384.961

c. Some of the segments are more "sticky" (i.e. have higher inertia) than others. Should the NPO focus their marketing activity on segments with higher or lower inertia. Explain your answer. High inertia (retention) high likely hood of staying despite marketing. Low inertia: high likelihood of being pushed into charitable seg through

marketing. We focus on low inertia segments since we can change their behavior thus may be more valuable.

3.) Assume that the NPO previously spread their marketing activities equally among all donors...

a. Which segment of donors is overall most important in order to secure funding of the NPO's future projects? Explain why. segment 3 because they have the highest CLV. It's almost double that of segment 2. They also have the highest frequency of donations. But we could also focus on segment 2.

b. Which segment should the NPO focus on in order to expand relationships? We should focus on segment 2 because our best customers are segment 3 so we don't need to improve our relationship with them. By focusing on segment two there is a high probability of the customers moving to segment 3, 46.5%, thus they can improve their donation, and we expand our relationship with them. We can do the same with segment on for the same reason

c. Which segment should the NPO focus on in order to retain their current donors? For our financial security we cannot afford to lose segment 3. Yhis is due to the high inertia and high monetary value. They also have the highest retention rate.